ABSTRACT

TITLE OF THE ABSTRACT: Characterisation of Venom Induced Consumption Coagulopathy (VICC) in patients with Haemotoxic Snake Bite and the effects of Blood Products on Coagulation Parameters.

DEPARTMENT: TRANSFUSION MEDICINE AND IMMUNOHAEMATOLOGY

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Introduction

Snake bite is one of the most important “Neglected Tropical Diseases.” Venom-Induced Consumption Coagulopathy (VICC) is the core pathogenic mechanism in haemotoxic snake bites. VICC is characterized by reduction of coagulation factors and the absence of systemic microthrombi and end-organ damage. The time course in VICC is rapid- occurring within a few hours of envenomation and resolution within 24-48 hours, if treated appropriately.
Objectives

The primary objective of this study was to identify patients with haemotoxic snake bite and to characterize Venom Induced Consumption Coagulopathy (VICC) in these patients. The secondary objectives were to study the coagulation profile in patients with haemotoxic snake bite and their response to treatment with Anti Snake Venom (ASV) and/or blood products. Comparison of sensitivity and specificity of the new test Vellore Manually Activated Clotting Time (Vemac Time) against a composite diagnosis of VICC. A review of retrospective data spanning a five-year period of the clinical and lab parameters of patients with haemotoxic snake who received blood products transfusion has also been undertaken.

Methods and Materials

This was an observational study with a retrospective arm comprising patients who were admitted between year 2012-2017 and a prospective arm for patients admitted between 2017 – 2018 at Christian Medical College, Vellore.

Results

Data from 280 patients who had a haemotoxic snake bite were analysed. There was a male preponderance among patients (71.07%). Pure haemotoxicity were seen in 32.9% (n=92) patients. Combinations of haemotoxicity with renal and/or neurological manifestations were seen in 67.1% (n=188). An abnormal INR (≥1.2) was seen in 94.38%. The average dose of ASV received per patient was 18.9 ±7.75 vials. Transfusions with blood and/or plasma products were needed for 47(16.8%) patients. All components were transfused: platelet concentrates (29.8%), FFP (65.9%), cryoprecipitate (31.9%) and cryosupernatant (10.6%).
Among patients in prospective group pure haemotoxicity was seen in 24.3% (n=9) patients. Combinations of haemotoxicity with renal and/or neurological manifestations were seen in 75.7% (n=28).

The newly designed screening test Vellore Manually Activated Clotting Time (Vemac Time) was compared against Prothrombin Time and also a composite diagnosis of VICC. The sensitivity of the test was found to be 81.82% and specificity was 100% when compared with PT. Positive predictive value of the test was 100% when compared with PT.

When compared to a composite diagnosis of VICC it was found to have positive predictive value of 100%.

Discussion and conclusion

Snake bite was and still remains a problem that can easily be tackled, if diagnosis and treatment is given in a timely manner. The role of a good haemostasis laboratory in detecting VICC and management of the patient is emphasized by this study. Antivenom is the major treatment for VICC. Treatment focuses on neutralization of venom effects with antivenom and waiting for the replenishment of coagulation factors. Antivenom is not risk free and adverse reactions can be quite common and potentially severe. Patients should be observed in hospital until clotting function has normalised.

Keywords

Snake bite, Haemotoxicity, Venom Induced Consumption Coagulopathy, Vemac Time